I. AMENDMENTS

AMENDMENTS TO THE CLAIMS

Cancel claims 22 and 24-60 without prejudice to renewal.

Please enter the amendments to claims 1-15 and 23, as shown below.

1. (Currently amended) A method for synthesizing isopentenyl pyrophosphate (IPP) via a mevalonate pathway in a host microorganism, wherein the method comprises:

~~introducing into the~~ culturing a transformed host microorganism in a suitable medium, the transformed host microorganism comprising one or more nucleic acids heterologous to the host microorganism, wherein the one or more nucleic acids comprises nucleotide sequences encoding two or more enzymes ~~each coding for a different enzyme~~ in the mevalonate pathway, and wherein the host microorganism is a prokaryote that does not normally synthesize IPP through the mevalonate pathway; wherein the mevalonate pathway comprises: ~~for producing isopentenyl pyrophosphate, and culturing the host microorganism in the presence of a suitable medium, wherein the synthesis comprises the steps of~~

(a) condensing two molecules of acetyl-CoA to acetoacetyl-CoA;

(b) condensing acetoacetyl-CoA with acetyl-CoA to form HMG-CoA;

(c) converting HMG-CoA to mevalonate;

(d) phosphorylating mevalonate to mevalonate 5-phosphate;

(e) converting mevalonate 5-phosphate to mevalonate 5-pyrophosphate; and

(f) converting mevalonate 5-pyrophosphate to isopentenyl pyrophosphate,

said culturing providing for production of the enzymes,

wherein said production of said two or more enzymes results in production of IPP.

2. (Currently amended) The method of claim 1, wherein the ~~plurality of~~ one or more heterologous nucleic acids ~~acid sequences~~ is integrated into the chromosome of the host microorganism.

3. (Currently amended) The method of claim 1, wherein the ~~plurality of~~ one or more heterologous nucleic acids ~~acid sequences~~ is contained in at least one extrachromosomal expression vector.

4. (Currently amended) The method of claim 3, wherein the ~~plurality of~~ one or more heterologous nucleic acids ~~acid sequences~~ is present in a single expression vector.

5. (Currently amended) The method of claim 4, wherein the single expression vector ~~contains~~ comprises the nucleotide sequence set forth in SEQ ID NO 7.

6. (Currently amended) The method of claim 3, wherein each of the one or more heterologous nucleic acids ~~acid sequence~~ is contained within a ~~different~~ separate expression vector.

7. (Currently amended) The method of claim 3, wherein at least two of the one or more heterologous nucleic acids ~~acid sequences~~ are contained in a single expression vector.

8. (Currently amended) The method of claim 3, wherein the one or more ~~some of the~~ heterologous nucleic acids is ~~acid sequences are~~ contained in two expression vectors ~~a first expression vector, and the remainder of the sequences, in a second expression vector~~.

9. (Currently amended) The method of claim 8, wherein the first expression vector comprises ~~contains~~ the nucleotide sequence set forth in SEQ ID NO 8, and the second expression vector ~~includes~~ comprises the nucleotide sequence ~~contained~~ set forth in SEQ ID NO 9.

10. (Currently amended) ~~The method of claim 1, wherein the one or more plurality of heterologous nucleic acids acid sequences comprises~~ A method for synthesizing isopentenyl pyrophosphate (IPP) via a mevalonate pathway in a host microorganism, the method comprising:

culturing a transformed host microorganism in a suitable medium, the transformed host microorganism comprising one or more nucleic acids heterologous to the host microorganism, wherein the host microorganism is a prokaryote that does not normally synthesize IPP through the mevalonate pathway, wherein the one or more nucleic acids comprises nucleotide sequences encoding two or more enzymes selected from:

a) ~~a DNA fragment coding for~~ an enzyme capable of condensing two molecules of acetyl-CoA to acetoacetyl-CoA, wherein said enzyme is from *Ralstonia*, *Saccharomyces*, or *Escherichia coli*;

b) ~~a DNA fragment coding for~~ an enzyme capable of condensing acetoacetyl-CoA with acetyl-CoA to form HMG-CoA, wherein said enzyme is from *Blattella or Saccharomyes*;

c) ~~a DNA fragment coding for~~ an enzyme capable of converting HMG-CoA to mevalonate, wherein said enzyme is from *Sulfolobus*, *Haloferax*, or *Saccharomyces*;

d) ~~a DNA fragment coding for an~~ a *Saccharomyces* enzyme capable of phosphorylating mevalonate to mevalonate 5-phosphate ;

e) ~~a DNA fragment coding for an~~ a *Saccharomyces* enzyme capable of converting mevalonate 5-phosphate to mevalonate 5-pyrophosphate; and

f) ~~a DNA fragment coding for an~~ a *Saccharomyces* enzyme capable of converting mevalonate 5-pyrophosphate to isopentenyl pyrophosphate,

said culturing providing for production of the enzymes, wherein said production of said two or more enzymes results in production of IPP.

11. (Currently amended) The method of claim 10, wherein the one or more ~~plurality of individual~~ heterologous nucleic acids ~~acid sequences~~ comprises:

a) the nucleotide sequence of SEQ ID NO 1;

b) the nucleotide sequence of SEQ ID NO 2;

c) the nucleotide sequence of SEQ ID NO 3;

d) the nucleotide sequence of SEQ ID NO 4;

e) the nucleotide sequence of SEQ ID NO 5; and

f) the nucleotide sequence of SEQ ID NO 6.

12. (Currently amended) The method of claim 1, further comprising recovering ~~wherein~~ the isopentenyl pyrophosphate ~~is recovered~~ from the transformed host microorganism.

13. (Currently amended) The method of claim 1, wherein the method further comprises reacting ~~at least one~~ isopentenyl pyrophosphate ~~is reacted~~ with dimethylallyl pyrophosphate or a polyprenyl pyrophosphate in the presence of at least one enzyme to provide a polyprenyl pyrophosphate isoprenoid precursor ~~, which is then reacted in the presence of an enzyme to form an isoprenoid~~.

14. (Currently amended) The method of claim 13, wherein the one or more ~~plurality of~~ heterologous nucleic acids ~~acid sequences~~ further comprises:

g) a DNA fragment coding for an enzyme capable of converting isopentenyl pyrophosphate to dimethylallyl pyrophosphate.

15. (Currently amended) The method of claim 13, further comprising reacting the polyprenyl pyrophosphate isoprenoid precursor in the presence of an isoprenoid-forming enzyme to form an ~~wherein the~~ isoprenoid [[is]] selected from the group consisting of a monoterpene, sesquiterpene, diterpene, sesterterpene, triterpene, tetraterpene, and a steroid.

16. (Original) The method of claim 15, wherein the isoprenoid is a monoterpene.

17. (Original) The method of claim 16, wherein the monoterpene is selected from the group consisting of limonene, citranellol, and geraniol.

18. (Original) The method of claim 15, wherein the isoprenoid is a sesquiterpene.

19. (Original) The method of claim 18, wherein the sesquiterpene is selected from the group consisting of periplanone B, artemisinin, ginkgolide B, forskolin, and farnesol.

20. (Previously presented) The method of claim 15, wherein the isoprenoid is a diterpene.

21. (Original) The method of claim 20, wherein the diterpene is selected from the group consisting of casbene and paclitaxel.

22. (Canceled)

23. (Currently amended) The method of claim 1 [[22]], wherein the prokaryote is *Escherichia coli.*

24.-60. (Canceled)